SOCIAL NETWORK, PERCEIVED ILL HEALTH AND USE OF AN EMERGENCY DEPARTMENT

A descriptive and experimental study

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CONTENTS

LIST OF ABBREVIATIONS

AA	Alcoholics Anonymous
AID	Automatic Interaction Detector
CHD	Coronary Heart Disease
ED	Emergency Department
GPRU	General Practitioner Research Unit
HIV	Human Immunosuppressive Virus
MIS	Medical Information System
OR	Odds Ratio
PHCC	Primary Health Care Center
SAS	Statistical Analysis System
SCC	Stockholm County Council
SMR	Standardized Mortality (Morbidity) Ratio
SRR	Standardized Rate Ratio
ULF	Undersökningar av levnadsförhållanden (National Surveys of Living Conditions)

INTRODUCTION

The contents of this thesis are focused on relationships between social integration, social network and social support, on the one hand, and perceived ill health and care utilization on the other hand.

Definitions of concepts

The concept 'social integration' can be interpreted in two ways, either as the process of internalization of an individual into society (1) or as a characteristic of society itself (2). In this investigation the latter interpretation based on Durkheim's theory on homo duplex was chosen (3). Although Durkheim never wrote explicitly on social integration - but rather on its counterpart, anomie - later interpreters of his theories have stated that "integration referred to the state of a society or group, not the attachment of individuals to groups" (2).

The concept of 'social network' was first discussed by Barnes, a social anthropologist who studied a small fishermen village outside the coast of Norway. "The image I have is of a set of points, some of which are joined by lines. The points of the image are people or sometimes groups and the lines indicate which people interact with each other" (4). In the present study a modified form was used, in which the network was divided into informal and formal spheres, according to where the individual might find support (Fig.1).

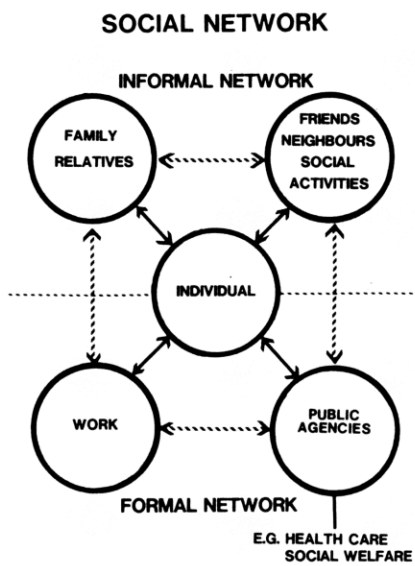

Figure 1. A conceptual model of a social network system.

The informal network is represented by close and extended family, friends, neighbours and contacts made within the realm of social activities such as associations, clubs etc. The formal network is represented by work and public agencies. It could be argued that workmates often belong to the informal sphere, but we have chosen to regard work as part of the formal network, since other aspects such as the labour market, the organisation of work, job opportunities etc. are influenced more by the formal than the informal sphere (5).

'Social support' is here defined in the terms suggested by Cobb, based on three different levels of information (6):

1. information leading the subject to believe he is cared for and loved. (agape, emotional support)

2. information leading the subject to believe that he is esteemed and valued (esteem support)

3. information leading the subject to believe that he belongs to a network of communication and mutual obligation (must be common and shared).

'Perceived ill health' was in this work represented by self-reported ill health, both such as documented in the medical records as reason for coming to the Emergency department (ED) and such as reported by the studied subjects in questionnaires and interviews.

'Care utilization' refers to objectively recorded contacts with care giving institutions as well as self-reported contacts.

Hypothesis

The main hypothesis was that if the informal network fails or becomes insufficient in any way, or if the work sector is deleteriously affected, the individuals may choose to turn to public agencies such as health care and social welfare for help. This hypothesis was tested in one such agency, the somatic emergency department of a general hospital.

Theoretical and empirical background

The shorter life expectancy and higher death rates in many causes of death among the lower strata in society have been known since the 12th century (7). The effects of social integration, social network and social support on health and health related behaviours have been studied since the publication of Durkheim's studies on suicide in 1897 (8). In the last decades, this interest in the relationship between social situation and different health outcomes has been renewed. In this research, three main streams are discernible: one focused on social isolation and mental health (9-14); one focused on the relationship

between social network/support and morbidity and mortality (15-20); and one based on studies of social network/support and care utilization (21-27). There is also an emerging literature dealing with chronic illness, survival and psychological and social support (28-32).

Most of the work on mental health has been initiated within the field of psychiatry. In their now classical studies, the Leightons demonstrated a relationship between social disintegration in rural areas and prevalence of mental ill health (10). These studies have been replicated both in rural and metropolitan areas (33,34). Dalgard, in his Oslo study, found that mental disorders were more prevalent in 'satellite' residential areas, characterized by high geographical mobility, skewed age distribution and lack of community resources, than in older and more stabilized areas (12). Cullberg and Stefansson studied the catchment area of a psychiatric sector clinic and characterized the residential areas in four combinations of high/low status and old/new development (13,14). Their findings corroborate those of Dalgard that mental disorders are more common in new low status development areas and that the inhabitants of such areas contact the local psychiatric clinic more frequently.

The interest in studies of the relationship between social network/support and mortality/morbidity originated in research on stress, life events and CHD mortality and morbidity (35-40).

In Marmot's studies on acculturation and heart disease in Japanese-Americans the loss of important cultural social support co-varied with the disease (15). In the Alameda Study, where a cohort of 6,000 inhabitants was followed for nine years with regard to mortality, Berkman and Syme were able to show a significantly increased mortality risk in all diseases for persons who had few social and community ties (16). These findings were later corroborated by the results from other longitudinal cohort studies from Tecumseh and Durham Counties (18,19). Tibblin and Welin, who followed birth cohorts with regard to mortality and size of households, social connections and activities noted both that a poor social network appeared to be an important predictor of mortality and furthermore that the worse the health, the less the social activity (20).

Within the field of care utilization and social network and support, two useful concepts have been established: 'sick role' and 'illness behavior'. Parsons suggested that the sick role was one of the social roles, and that a person is not just sick, he adopts a sick role, which exempts him from normal social and personal obligations (41). Mechanic coined the term 'illness behaviour', which "refers to the ways in which given symptoms may be differentially perceived, evaluated and acted (or not acted) upon by different kinds of persons" (42).

One of the early researchers who discussed care utilization as dependent on the social situation was Zola, who suggested that "a socially conditioned selective process may be operating in what is brought in for medical treatment" (21). He proposed five 'social triggers' that either separately or together could cause a person to seek medical care (43). In his study of prenatal care, McKinlay discussed social support and under-utilization and found that the underutilizers

"relied on an undifferentiated group of readily available relatives and friends as lay consultants before using the services" (23). In a review article on studies of the use of medical care, the same author suggested that studies be made on "the possible importance for utilization behaviour of such broad factors as area of residence, occupational group (as distinct from social class), occupational and residential stability, household composition and stage in life cycle" (44). Antonovsky and Shuval have studied 'over-utilization' in Israel, where the health insurance scheme is similar to that of Great Britain and the Nordic countries (24,25). Antonovsky presented a conceptual model of factors that influence visiting frequency: the host (patient), the agent (medical institution) and the environment (value system and social structure). He proposed that the variation in patterns of visits to the physician in given societies or social groups of relatively similar morbidity can be understood by a consideration of this triad (45). Shuval has discussed the role of the local clinic as legitimizer of that special kind of sick role that is adopted as a result of failure to cope with the social situation (46). The relation between social network - lay referral systems and care utilization in Sweden has been studied by Tengvald (26).

The increase of interdisciplinary studies can be dated to 1976 when Cassel proposed "the theory of general susceptibility" (47). In his often cited article, "The contribution of social environment to host resistence" he argued, "A remarkably similar set of social circumstances characterizes people who develop tuberculosis (48), schizophrenia (49), become alcoholics (50), are victims of multiple accidents (51), or commit suicide (8). Common to all these people is a marginal status in society". And he suggested that health care should in the future be able to identify individuals and groups at high risk on account of their social circumstances and that strategies for strengthening their social networks should be developed.

Intervention studies

In close proximity to the growing evidence of the healthful effect of formal and informal support networks, various intervention studies have been undertaken. Most of the intervention studies have focused either on persons who were hospitalized due to physical illness; - heart attack (52), surgery (53), mastectomy (54) - or on groups risking development of ill health e.g. the recently bereaved (55) or of specific health problems (hypertension (56), diabetes (57), obesitas (58). The majority of these intervention programs have been undertaken by health professionals. Other intervention programs have been developed by support groups (e.g.patients associations), lay persons with similar experience (e.g. AA). Most of these program studies have, regardless of the initiators' professional status, shown that support facilitates and promotes recovery from health problems (59). A few studies have involved the use of lay persons. Thus, Sosa in a controlled clinical trial demonstrated that the presence of an untrained lay companion during labour diminished both the duration of delivery and relative occurrence of complications (60). Increased participation in purposeful activities in a group of residents in a senior citizen's service home resulted in

decrease of restlessness and in improvement of physiological variables (61). A group of elderly women living outside of institutions benefited from regular informal meetings initiated by the social home service (62). This strengthening of the informal network resulted both in better self-esteem, less loneliness and feeling of meaninglessness and a decrease of blood pressure. Other studies confirm the usefulness of this type of intervention for elderly people (63,64).

Studies on use of emergency care

Only a few studies have related social network and perceived ill health to the use of emergency facilities (65,66). Satin discussed the failure of the emergency department staffs to cope with the patients' social and psychological problems (67). Ullman and associates found that underprivileged groups recurrently turned to the ED, and emphasized the necessity of introducing the patients' frequency of visit as an important variable in ED use analysis (68). In a study of acute pediatric care in a sample of families enrolled in a prepaid group practice, Horwitz et al found that "the tendency to call on network members modifies an individual's propensity to seek care for minor pediatric medical problems" (27). In a study of the ED of a large university hospital Magnusson demonstrated that recurrent (4+ yearly visits) ED users were a psycho-socially vulnerable group in comparison to both non-users and infrequent users (1-3 yearly visits) (69). The author also proposed that persons with psycho-social competence should be available in somatic EDs and suggested that social workers should be assigned to these. So far, no information is available on the effects of such an intervention.

Social work in health care

Social workers in health care were first introduced in Great Britain by Sir Charles Lock in 1895 at the Royal Free Hospital (70). The hospital social worker, then named 'Lady Almoner', was to:

- control that patients who were able to pay for their care at other institutions should not use the Royal Free
- refer those patients to state and municipal authorities who could best benefit from the public help organizations
- make the care more effective by cooperating with such public help organizations.

In the US, hospital social workers in ambulatory care were introduced 1905 by Dr Richard Cabot at the Massachusetts General Hospital in Boston. In his book 'The physician and the social work' he emphasized that the physician should monitor the individuals' physical recovery, the social worker should identify the hundred and one external influences that affected the health of a person (71).

In Sweden, hospital social workers first appeared on the scene in 1914. In the official instructions for social workers in hospitals and other medical settings the National Board of Health and Welfare stated in 1968 that the social worker should (72):

- investigate and clarify the patients' social situation when this is of importance for diagnosis and treatment and/or the social planning
- take part in treatment through supportive and explanatory counseling talks with the patients, individually or in groups
- initiate social support routines in cooperation with the patients, relatives, personnel and public agencies or private welfare organizations
- monitor the social planning
- supply patients and personnel with social information
- keep a social worker record
- take part in developing and planning, call attention to need of resources.

According to the above review, social integration, social network and social support do indeed affect the health and wellbeing of both individuals and groups. Furthermore, intervention aimed at strengthening the social network can enhance both health and well-being. This would indicate an important role for the hospital social worker, whose classical task is to try to identify and solve the patients' psychological and social problems. The present study will explore the effects of social work in emergency care.

As suggested previously, recurrent users of somatic EDs are believed to be a psycho-socially vulnerable group. Hence, it seemed rational to focus on this group of patients, to identify their problems and try to strengthen their social network and support.

AIMS

The aims of the present study were:

to investigate the relationship between social network, perceived ill health and utilization of an ED;

to relate the frequency of ED use to socio-demographic risk indicators for social disintegration;

to describe the psycho-social and medical situation of a group of heavy users of ED facilities in comparison with the general population;

to relate changes in social network in a group of heavy users to utilization of ED;

to evaluate the effects of hospital social worker intervention on heavy users of ED;

MATERIAL AND METHODS

Organisation of care

The Stockholm County Council (SCC) is responsible for all public health care for the county inhabitants (1.5 million) who in 1980 made 4.7 million visits to physicians. At that time eleven hospitals with adult Casualty and Emergency Departments (ED) and 98 Primary Health Care Centers (PHCC) were under the administration of the SCC. The adult inhabitants paid an average of 30 visits per 100 inhabitants (range 19-41) to the EDs, or 53 % of all visits of emergency character. The reminder of the emergency visits took place in the PHCC which together received 19 % of these visits, the deputizing medical services accounted for 12 % and other outpatients' departments with emergency facilities for 16 %. Over the last six year period (1980-85) the pattern has changed. Still around 30 % of all public health care visits were of emergency character. In 1985 the PHCCs received 36 % of these visits, and the somatic EDs 43 %. The deputizing medical services had decreased their part to 7 %. The somatic EDs accounted in 1980 for 17 % and in 1985 14 % of all visits to physicians. The trend seems to be from EDs towards PHCCs. The encouragement of this trend has also been a pronounced policy of the Ministry of Health and Social Affairs. It must, however, be recognized that the official statistics are based on number of visits, not on the number of visitors. The number of visits paid to registered private physicians remained unchanged during this period, around 1 million.

The county is organized into five health care districts. Within these districts, each hospital and PHCC served specified geographical areas (catchment areas) and the inhabitants were obliged, - or at least strongly advised - to seek care at their assigned hospital or PHCC. Especially the EDs would not accept a patient from another catchment area except in urgent cases.

St Göran's Hospital

The present study was carried out at the St Göran's Hospital in the Western District of the county. This hospital is one of the oldest in Stockholm, its history dating back to the 15th century, when it was situated in what today is the very heart of the city. Until 1888 the hospital was specialized in venereal diseases, but it has during the past century developed into a general hospital. In the 1950's it was planned to have 1,200 beds. During the last decades both the planning and the actual facilities of the hospital have been changed several times. When this study was started in 1980, the main or general hospital had 298 beds, and now seven years later it has 356 beds. Three special departments are also situated within the hospital area, a pediatric hospital and a psychiatric department, (both university departments) and a long term care unit.

The present study was carried out at the general adult ED of the main hospital. This ED received in 1980 34.2 visits per 100 adult (age 15+) inhabitants in the catchment area. The catchment area was altered in 1983, and the ED then received 33.3 visits per 100 adult inhabitants. The ED accounted for an average of 48 % of all visits to the main hospital. In 1982, 17.5 % of the inhabitants visited the ED and in 1983 16.6 %. Around 1 % of all inhabitants made 4 or more visits per 12 months period. These patients represented between 6 and 7 % of all the visitors and accounted for 20-23 % of all visits. This implies that around 1000 persons accounted for 7,600 visits to this ED alone. If these figures were applied to the total number of somatic ED visits in the county, 15,500 individuals would account for almost 119,000 visits per year.

The catchment area of the St Göran's hospital has been altered four times in the last decade. Only one of these changes took place during the study period. In the years 1979-82 the hospital's catchment area consisted of four inner city parishes and four suburban parishes. In 1983, the catchment area was changed to consist of four suburban parishes, three of which were the same as in the earlier period (see Fig.2,3).

An overview of some socio-demographic and social characteristics of the different areas is presented in Table I. Some of these characteristics were used in paper III, and some new ones have been added to give a more detailed picture. In this overview, three of the inner city parishes have been aggregated into one unit, Innercity I, since two of these parishes were sparsely populated.

Communications

The hospital is not located within the bounds of the catchment area (Fig. 2 and 3). The public transport system is well developed both within the different areas and between the hospital and the areas. The hospital can be reached both by bus and subway and two subway stations have exits at hospital entrances. The average travelling time by public transportation from the different subareas to the hospital ranged between 11 and 24 minutes. These were average estimates, and there were variations within each of the subareas depending on where the persons lived in relation to bus and subway stations. Earlier studies have shown a relationship between distance to the ED and visiting frequency. In our studies, no such relationship was observed, which could be due both to the good connections and to the relatively small differences in travelling time from the subareas.

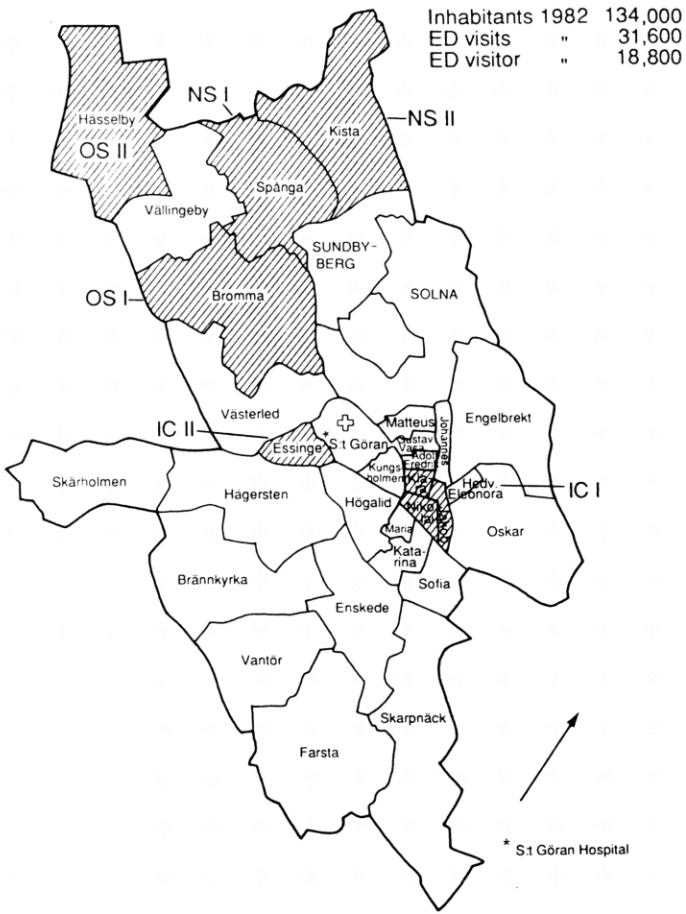

Fig. 2. The catchment area of the hospital 1979-82

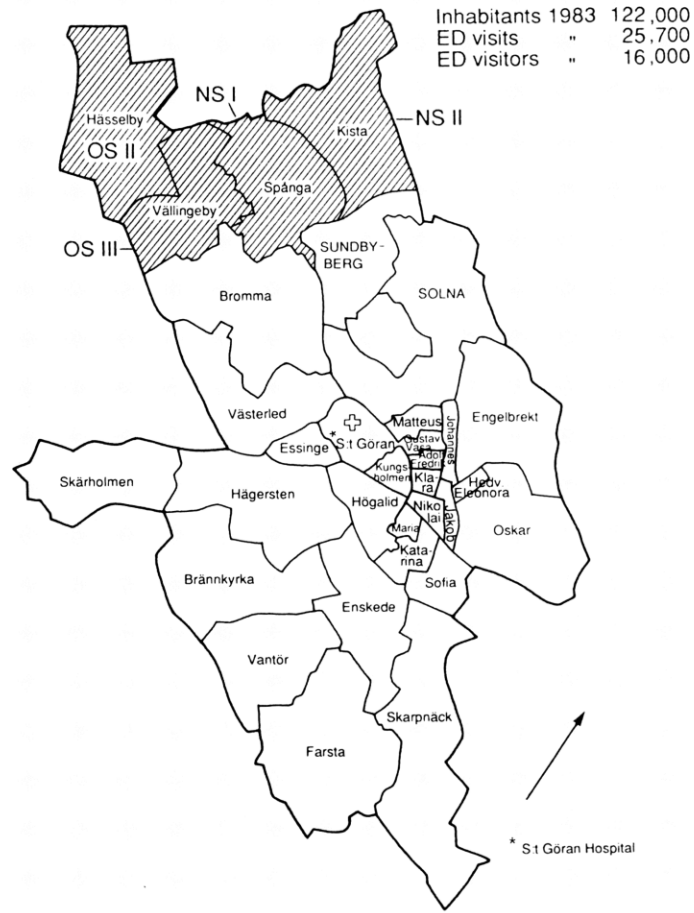

Fig. 3. The catchment area of the hospital 1983-86

Table I. Changes between 1980-84 in socio-demographic and social characteristics in the different parts of the catchment area of St Görans Hospital. Percent distribution and index.

	IC I	IC II	OS I	OS II	OS III	NS I	NS II	(county)
Age 70+								
%								
1980	16	22	16	8	6	5	8	9.5
1984	15	22	18	9	8	5	9	10
Sickdays per person								
1980	16	19	19	19	19	28	22	19
1984	15	17	15	17	17	24	20	17
Disability pension index								
1980	124	121	116	94	87	102	125	100
1984	73	99	94	88	88	117	121	100
Social welfare index								
1984*	127	50	64	71	71	269	180	100
Unemployed								
%								
1980	3.1	3.0	3.7	3.4	2.7	6.5	4.5	4
1984	3.0	2.5	2.0	2.0	2.0	4.5	3.0	2
Immigrants								
%								
1980	14	10	10	8	8	31	15	14
1984	14	10	9	9	9	36	18	14
Living alone								
%								
1980	58	64	48	37	37	40	51	44
1984	64	59	45	35	35	38	39	41
Moving in								
%								
1980	16	13	10	8	9	16	22	12
1984	19	13	11	11	11	16	13	13
Moving out								
%								
1980	60	12	11	9	10	16	12	12
1984	20	13	10	10	10	17	14	13

* Social welfare index for the city of Stockholm 1980 not available.

Source: Regional data 1983 and Regional data 1985. The Stockholm County Council Regional Planning Office, Stockholm 1983 respectively 1985.

The Medical Information System

Since 1969 the Health and Medical Board of the County Council operates a Medical Information System (MIS) register, based on the central population register (73).

All Swedes and foreigners residing in Sweden are registred in this central population register by their personal identification number (date of births plus 4 digits). The MIS, designed to cover all contacts with medical and preventive care units in the county, has not yet been fully developed. In order to obtain information on individual patients and their frequency of visits to the St Göran ED, a special procedure was therefore developed for the purpose of this study. All visits and visitors to this ED have been registered in the MIS since 1982. Besides personal identification number, name, domicile, date and time of visit, actual clinic within the ED, referrals to and from the ED, hospitalization or other dispositions were entered. Parallel to this, the patients were manually recorded in the ED log-book. The MIS registration was checked with the help of the log-book on the basis of a random sample of 1000 visits during the study period. One percent of the visits proved to be missing in the MIS register.

Study populations

In Papers I and II, the studied sample was a group of patients who visited the ED between October 6th and November 5th 1980. The medical records of all patients who visited the ED during this period were examined. Those who had made 4 or more visits during the preceding 12 months were identified and constituted the study group (N=232). An overview of these patients' flow through the ED during the qualification year (October 6th 1979 - November 5th 1980) is presented in Paper I, Fig.3.

The population in Paper III were all visitors to the ED between March 1st 1982 and February 29th 1984 who lived in the catchment area. The sample in Paper IV consisted of all patients with 4 or more visits during the preceding year who visited the ED between January 15th and June 15th 1984. Only those who lived in the catchment area and visited the ED between 7 a.m. and 9 p.m. and who came without referral and were not hospitalized at the actual visit were included. Heavily intoxicated patients and patients who could not speak Swedish and thus could not fill out the questionnaire were excluded. The final sample comprised 248 persons. In Paper V, both the patients from Paper IV and a new sample of first time visitors were studied. The sampling of the first time visitors took place during January and February 1985. The prerequisites for being included in the study were the same as for the sample in Paper IV. The sample of first time visitors comprised 107 persons.

Information on the study populations

Papers I, II, IV and V were all based on individually collected data. In Papers I and II information on socio-demographic, psycho-social and medical situations were collected from the MIS register, from medical and hospital social worker records and from telephone interviews. In Paper I a randomly selected group was interviewed approximately 6 months after the patients' ED visit. In Paper II all eligible patients were interviewed by telephone two years later. The interviews followed a semi-structured questionnaire which contained 24 items on psycho-social situation, health care contacts and perceived state of health. Information from social welfare and health insurance registers was obtained after the respective authority had controlled and approved of the aim of the study. In Papers IV and V, the information was collected by questionnaires (IV,V) and interviews (IV). The questionnaires contained 45 items on socio-demographic and social network variables, social problems, personal problems, perceived state of health and contacts with care giving institutions. The questions on social and personal problems were based on a British classification from the General Practitioners Research Unit (GPRU)(74), revised to suit Swedish conditions and complemented with suggestions of possible interventions for each problem. The questions on perceived state of health and social network have previously been used in the surveys of living conditions (ULF)(75). Self-reported ill health or handicap was coded with help of the simplified version of the 8th International Code of Diseases used in the ULF surveys (76). Internal validity was obtained by the three social workers' agreeing on classification of problems and interventions prior to coding. The questionnaires were also validated by the interviews. The interviews yielded more information than the questionnaires, but no contradictions were found (Paper IV).

The interventions undertaken in Paper I followed regular hospital social worker routines. The interventions in Paper IV were classified according to the above mentioned GPRU classification (74).

The regular record keeping routines of the ED hospital social workers were slightly altered during the sampling period for Paper IV. In order to protect the integrity of the studied patients, all social worker records followed the Swedish version of the GPRU classification, regardless of whether the patient was in the studied sample or was an ordinary ED social worker case. In this way it was rendered impossible to trace the studied patients in the Social Work Departments files of records.

Paper III was based on the ED register described above. Information on factors involving risk of social disintegration was obtained from official sources.

All patients in Papers I, II, IV and V had been informed of the study design and given their consent.

Data analyses

All information was computerized and stored according to the Swedish Data Law and with the permission of the Swedish Data Inspection Board.

Means, frequencies and t-tests were calculated with the help of the statistical package SAS (77). Odds ratios (ORs) were calculated when comparisons were made between cases (heavy users with with more than 7 visits in paper I and heavy users with 4+ visits in paper V) and controls (heavy users with 4-7 visits in paper I and first time visitors in paper V) (78).

Standardized Morbidity and Mortality Ratios (SMRs) were calculated when comparisons were made between characteristics of the studied subjects and of the general population (papers I and II) (79). Age Standardized Rate Ratios (SRRs) for ED use were calculated and used as dependent variables in paper III (78). In the analyses of the relationship between the dependent variable (SSRs) and the social disintegration risk indicators, the Kendall rank and partial rank correlations were used (80).

Three different multivariate analyses were applied. Multivariate Regression Analysis was used in papers II and IV (81). In this analysis the partial relationship between one predictor and the dependent variable can be studied simultaneously, controlling for relations between the other predictors and the dependent variable and the predictor in question. In both these analyses, ED use during follow-up was the dependent variable, and the collected information on the various socio-demographic, psycho-social and health related variables were used as predictors.

Automatic Interaction Detector (AID) analysis was also used in papers II and IV (82). With this technique an attempt is made to explain the variation of the dependent variable with the aid of a number of independent variables - predictors. The interest is focused on which variables explain most of the variation of the dependent variable. The method is based on a stepwise analysis in which the population under study is successively divided into two mutually exclusive sub-populations in such a way that they show as large a contrast as possible with respect to the dependent variable. In the first step the original population is divided into two subgroups. In the second step the subgroup that has the largest variance with respect to the dependent variable is divided (split) on the predictor that explains most of the variance and so on. In the present work the AID technique was used to explain variance in ED use during follow-up (dependent variable) as dependent on predictors (independent variables) on which information had been collected prior to follow-up.

The logistic multivariate regression analysis was applied in paper V to calculate multiple ORs in the comparison between cases (heavy users) and controls (first time visitors) (83).
In the equation $y = \ln P/(1-P) = \ln OR = \beta_0 + \beta_1 x_1 + \beta_2 x_2 \ldots + \beta_k x_k$
P denotes the probability of being a heavy user, while $x_1, x_2 \ldots x_k$ are the explanatory variables such as age, sex, loneliness, perceived ill health etc.

The parameter β_i shows the change in the logarithmic OR of being a heavy user when the value of x_i increases by one unit, given that the other variables remain unchanged. For a dichotomous variable such as being a heavy user or not coded 0 for No and 1 for Yes, this means that β_i shows the difference in log OR between individuals who are heavy users and the first time visitors. An estimate of the OR for the dichotomous variable is attained as e^{β_i}. The parameters of the model were estimated by the maximum likelihood-ratio method. Likelihood-ratio tests were used to test the significance of the individual parameters. A step-wise selection procedure was employed.

SUMMARY OF PAPERS

Paper I

The aims of this study were to describe the psycho-social characteristics of the repeater patients in relation to that of the population of the catchment area and to identify psycho-social problems that could be amenable to hospital social worker intervention.

The study group consisted of patients who had made 4 or more visits to the St Göran general emergency department (ED) 12 months prior to the study period in October 1980. The study comprised 232 persons and all their St Göran hospital records were reviewed for medical and social information. Information was also obtained from health insurance and social welfare records.

The psycho-social profile of this patient group was then compared to that of the general population of the catchment area as described in official documents.

Every second patient in the study was interviewed on telephone by a hospital social worker 5-7 months after the ED visit in October. The questionnaire used in the interview comprised 24 items on socio-demographic and psycho-social situation and health care contacts outside the ED.

The repeater patients had made an average of 7.1 visits in the year prior to the start of the study. The repeater group was more burdened with psycho-social problems than the general population in the catchment area. Patients with 8 or more visits were especially afflicted by such problems. Also patients with alcohol problems were heavily burdened but did not report deteriorating health or health poorer than that of persons of the same age. Patients with bronchial asthma made numerous ED visits but were not proportionally burdened with psycho-social problems.

In the interviews, 25 % of the patients mentioned problems that led the interviewing social worker to intervene. After one year of follow-up this group had significantly reduced their number of ED visits in comparison to a matched control group.

In conclusion, the repeater group, besides having a poorer health, also differed significantly from the general population by more often living alone, feeling more lonely, having more days of sick leave, more often living on disability pension and more often having contact with social welfare agencies. It was concluded that, despite their extensive contacts with both medical and social care providers, the repeaters could benefit from hospital social worker contact.

Paper II

The aim was to follow a cohort of heavy ED users (4+ yearly visits) with regard to changes in medical and psycho-social profiles and ED use. 232 patients who had made 4 or more visits to the general emergency department of St Göran's hospital during a 12 months period prior to start of the study (October 1980) formed the material for the study. This group was then followed for two years with regard to changes in medical and psycho-social profiles and frequency of ED use. Information was collected from the MIS register, as well as from medical and hospital social worker records. A randomly selected sub-group was interviewed at the beginning of the study. The interview was repeated at the end of the study, when all eligible patients were interviewed a second time.

The interviews followed a semi-structured questionnaire that covered psycho-social situation, perceived state of health and health care contacts.

There was an 18 % increase in number of diagnoses of diseases in the respiratory system. The 37 patients with bronchial asthma accounted for the main part of this increase. Mortality was high among the heavy users and 16 % had died during follow-up. SMR for the first follow-up year was 590 % for men and 740 % for women. SMR for the second year was 380 % and 350 %, for men and women respectively.

Automatic Interaction Detector (AID) analysis was used to identify predictors for maintained high ED use. The effects of changes in social network on ED use were analysed by a stepwise regression analysis.

According to AID analysis the frequency of ED visits during the year prior to the study period was the strongest predictor for a maintained high ED utilization. When only information from the first interview on psycho-social situation was entered into the model, perceived loneliness emerged as the strongest predictor for a maintained high ED use.

Regression analysis showed that changes in perceived loneliness explained 12 % of the variance in ED use, changes in work situation 5 %, changes in marital status 3 % and changes in accessibility to family and relatives another 2 %. In all, 22 % of the variation in ED use was explained by these factors. Age and sex did not have any significant effect.

In conclusion, changes in access to social network could influence the illness behaviour of persons seeking care at the somatic ED. The findings emphasize the necessity of identifying the "hidden needs" of these patients and of allocating resources for dealing with these.

Paper III

The aims were to estimate the risk of social disintegration on community level by socio-demographic characteristics and to relate these estimates of social disintegration to illness behaviour, here defined as individually based frequencies of ED visits.

The catchment area of the St Göran hospital was the object of the study, which was carried out in 1982-84. The catchment area consisted of four innercity parishes and four suburban residential areas during the first study year. The four innercity parishes were aggregated into one area since they were sparsely populated. During the second study year the catchment area consisted of four suburban areas, three of which were the same as the first year.

The areas were classified by six different socio-demographic variables considered to be indicators of the risk of a lower degree of social integration in the Stockholm context: proportions of persons moving into and out of the areas; proportion of single person households; proportions of unemployed in two age groups, 16-24 and 25-64 years; and proportion of immigrants. Information on these risk indicators was obtained from age standardized census data for each of the areas. A score, based on the observed proportions of each area in comparison to the average of the whole county - observed/expected - was calculated for each risk indicator.

The measure of illness behavior was based on a register of visitors to the somatic ED of the catchment area. It contained information on birth date with identification number, domicile, time and day of visit. During the two years 34,915 persons living in the catchment area had visited the ED and made altogether made 57,481 visits. For each of the residential areas age standardized rate ratios (SRRs) of risk of ED visits was calculated for each sex and visiting frequency group (1-3 and 4+ visits), using the average number of ED visitors from the whole catchment area within each age and sex group as reference. On the assumption that access to Primary Health Care (PHC) could be an alternative to use of the ED, the number of visits and the number of PHC physicians per 1000 inhabitants were also calculated.

Association between the risk indicators for social disintegration and use of the ED, as expressed in the SRRs, was calculated by the help of the Kendall rank correlation. To test the possible relationship between the sum of the risk indicators and ED use, the Kendall partial rank correlations were used, controlling for access to PHCC and median age.

Thus, 17.5 % in the 1st year and 16.6 % in the 2nd year of the inhabitants had visited the ED during the study period. The heavy users constituted 6-7 % of the visitors and accounted for 20-23 % of all the visits. There were no differences between occasional visitors (1-3 yearly visits) and heavy users (4+ yearly

visits) as to time and day of visit. Fifty-four percent of all visits were made between 7 a.m. and 9 p.m., Monday to Friday. Visitors from the two most recently developed residential areas had made significantly more visits than expected.

There were no significant differences between the sexes, neither for occasional visitors nor for heavy users.

Significant relationships were found between the scores of the separate variables and ED use. The strongest correlations were found with proportions of immigrants, adult unemployed and persons moving into an area.

On the principle that an area could not be characterized by one single risk indicator, an index was formed by summing the six indicators, calculated as ratios (observed/expected). Significant correlations between this index and ED use were found for three of the four studied sub-groups.

It could be hypothesized from these findings that, even if an individual was not personally affected by any of the factors used to characterize the community in which he lived, merely living in an area characterized by large proportions of immigrants and adult unemployed, and a shifting population might influence his social environment and the possibility to create or maintain a supportive social network. It could also be argued that an unexpectedly high use of ED facilities might reflect a less stable social environment.

Paper IV

The aim was to test the effect of intervention by a hospital social worker on a group of recurrent ED visitors, in a randomized clinical trial.

The study was carried out in 1984-85. The study group comprised 248 patients who had made 4 or more visits (repeaters) to the adult somatic emergency department during the year prior to the study. Only patients who resided in the catchment area and who were not hospitalized when they came in, were included. All repeater patients who met these requirements and who visited the ED between 7 a.m. and 9 p.m. were asked to fill out a questionnaire. The questionnaire comprised 45 items that covered the following areas: socio-demographic; social network; social problems; personal problems; perceived state of health; contacts with care giving institutions. After having returned the sealed questionnaire the patients were randomly divided into an intervention group and a control group. Patients in the intervention group were interviewed by a hospital social worker. The interview followed the same questionnaire. When an amenable problem was identified in the interview, the social worker together with the patient and the physician in charge planned an intervention. The aim of the intervention was to identify and to supply, if possible, the psycho-social support or other social help that the patient needed.

After one year the same questionnaire was sent by mail to the patients in both groups. The percentage of forms returned by eligible patients was 80 % and did not differ between the groups. The number of visits for the qualification and follow-up years were obtained from the Medical Information System (MIS) register.

Student t-test, a stepwise regression analysis and Automatic Interaction Detector (AID) analysis were used for analysis.

Social worker intervention was carried out for 87 % of the interviewed patients. The average number of interventions was 1.8. The different types of interventions were classified into three mutually exclusive groups, according to the degree of involvement of the social worker: referrals only: referrals and counseling: referrals and supportive contact. In all three groups the most frequent intervention was referral to somatic care givers outside the ED. The three types of intervention had different effects on visiting frequency during follow-up. The decrease in number of visits was most notable in the group that besides referrals, received a supportive contact with a hospital social worker ($M=3.7$). Follow-up analysis demonstrated no significant difference between the two groups as regards total visiting frequency. After controlling for age, sex, marital status, living alone, loneliness, chronic illness or medical diagnosis only two subgroups showed a significant decrease in ED use, namely men over 50 who either lived alone and/or were unmarried.

The most interesting finding was that of the AID analysis of psycho-social predictor variables and ED use. In the intervention group the single significant predictor for ED use was whether or not the patient held a job before entering into the study. In the control group the pattern was more complex. Age under 65 and no reported illness or other health problem were associated with a decreased ED use. Special risks for maintained high ED use were age (65+), living alone and the absence of a regular source of medical care. This subgroup made an average of 8 visits during follow-up.

The stepwise regression analysis showed that the factor most strongly associated with a maintained high ED use was the visiting frequency during the qualification year. This factor explained 48 % of the variation in the control group but only 11 % in the intervention group ($p<0.01$).

In conclusion, hospital social worker intervention had a selective effect on the predictor pattern for continued ED use. However, the visiting frequency itself was not significantly affected, which would suggest that societal factors outside the hospital social worker's scope of action had a strong influence on care utilization. The results suggest that community health dispositions might preferably form an integrated part of the care system.

Paper V

The aim was to analyze risk-indicators as regards ED use among repeaters and first time visitors and their relative importance.

The study was carried out in 1984-85. Two groups of patients were identified by the Medical Information System (MIS) register: one group of patients who had made 4 or more visits to the ED during the previous year (repeaters) and another group who visited the ED for the first time. The study of the repeater group started in January 1984 and the study of the first time visitors was launched in January 1985. Only those who lived in the catchment area, came to the ED between 7 a.m. and 9 p.m., and were not hospitalized were included. The repeater group comprised 248 and the first time visitors 107 persons. Both groups were asked to fill out a questionnaire at the ED. The questionnaire comprised 45 items covering the following: socio-demographic data; social network; social problems; personal problems; perceived state of health; contacts with care giving institutions. The questionnaires were kept sealed until the end of the one year follow-up.

Number of ED visits for the qualification and follow-up years was obtained from the MIS register.

The study was conducted as a case-control study with the repeaters as cases and the first time visitors as controls. Four different Odds ratios (OR) were calculated: OR_1 without stratifying: OR_2 stratifying for age: OR_3 stratified for age and health. The fourth multiple OR_4 was calculated by a stepwise logistic regression analysis.

The first time visitors were significantly younger than the repeaters. The male/female ratio was the same in both groups. 63 % of the repeaters and 27 % of the first time visitors returned to the ED during follow-up. Of the repeaters 21 % remained heavy users while only 2 % of the first time visitors became repeaters.

Significantly more often than the first time visitors, the repeater group reported both chronic illness and general health problems. The medical profiles based on self-reported illness showed that respiratory disorders were more prevalent in the repeater group, while accidents and poisoning were proportionally more common among the first time visitors.

The proportion of immigrants was significantly higher in the repeater group. Among the first time visitors both proportions of professionals and of persons who were either employed or had retired because of age was significantly higher. The repeaters reported significantly higher degree of loneliness, lack of close friends and less contact with family. The repeaters more often reported economic problems.

The repeaters also reported more chronic illness, general health problems, health poorer than that of others of the same age, deteriorating health the past 12 months and alcohol problems than did the first time visitors.

Previous contacts both with the hospital's outpatients' and social work departments as well as with social welfare agencies were significantly more common among the repeaters. However, there was no difference between the groups as regards regular source of medical care, contacts with PHCCs or private physicians. Logistic regression analysis showed that previous contact with the hospital outpatients' departments and alcohol problems were strongly associated with repeater behaviour. Lack of close friend and previous contact with a hospital social worker were together with general health problems and deteriorating health also significant risk indicators for repeater behaviour. Age and sex did not appear as significant indicators.

In conclusion, the incidence of repeater behaviour during the one-year follow-up among the first time visitors was 2 %. The case-control method used in this study does not allow a distinction between cause and effect. Only conclusions concerning the differences between the repeaters and the first time visitors can be drawn. The results indicate that determinants for repeater behaviour are poor health and a seeming lack of social support and that the individuals were known at the hospital, not only in the ED, but also at the outpatients' departments and in the social work department. This would imply that the next step should be to devise an individual treatment plan, that encompasses both medical, social and societal measures.

GENERAL DISCUSSION

The main hypothesis in the present study was that persons who repeatedly turn to care giving institutions such as somatic emergency departments, do so partly because of lack of support in their social environment. This hypothesis was verified to some extent by the descriptive part of the study which showed that the recurrent ED users belonged to a psycho-socially exposed group. The results did, however, not allow any definite conclusion concerning causality.

Social environment in its broadest sense includes everything that an individual may encounter in society, all from things personal to things structural. One way of narrowing the concept would be to define social environment as a social system characterized in terms of possible problem areas: cultural problems (normative), social problems (deviant behaviour, alcoholism etc.) and structural problems (unemployment, geographical mobility, etc.) (Fig.4).

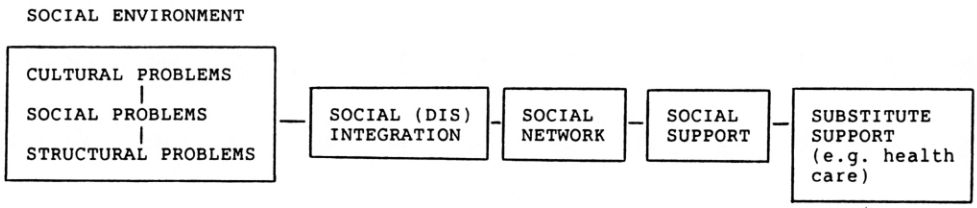

Figure 4. A conceptual model of possible interactions between social problem areas within social environment and social (dis)integration, social network, social support, and substitute support.

These problem areas interact, both outside the control of the individual and as a result of individual actions (59). According to the number of problems and their interaction, the social environment of the individuals may or may not offer possibilities for building and/or maintaining social ties or networks. These networks may be supportive, but they may also exercise social control (in its normative sense). An increasing amount of such problems, especially outside the control of the individual, may lead to a state of social disintegration, which in turn may create difficulties to get access to support-giving networks and thus create a need for substituting support, e.g.within health care.

It is also possible that certain problems within the areas suggested above may lead to a direct need of medical care. Cultural problems, such as large proportions of inhabitants who have other than traditional Swedish cultural norms may lead both to over-utilization and under-utilization of societal resources such as health care and welfare. Socially deviant behaviour, such as alcoholism, is well known to lead to increased need of care. Lately it has been noted that de-

viant behaviour can create risks (HIV infection) which will put an enormous demand on societal resources, both within health and social care and in society at large. There are also direct lines between structural problems and need of care, e.g. organization of traffic.

A second hypothesis

The results from the descriptive study then led to the formulation of a new hypothesis: that societal forces outside the reach of both patients and hospital social workers can trigger recurrent ED use. Support for this hypothesis was procured both in the follow-up of the first cohort (Paper II), the ecological study (Paper III) and in the experimental study (Paper IV).

According to the follow-up study (II), changes in access to social networks co-varied with ED use over time, and an improvement of the social situation led to a decrease in ED use.

The ecological study (III) demonstrated that risk indicators for social disintegration (which here was defined as the state of the society or group) co-varied with ED use, not only for heavy users but also for occasional visitors. The three risk indicators (proportions of immigrants, of unemployed and of persons moving into an area) that intercorrelated with ED use all belonged to the structural problem area (Fig. 4)

Furthermore, this hypothesis is supported by study IV which showed that social worker intervention had a selective effect on which patients would remain heavy users. The factor not affected by social worker intervention was whether the person was employed or not.

It has been suggested that intervention may be defined as taking part in problem definition, suggesting helpful courses of action that might alleviate the problem, offering emotional support as well as information and instrumental aid. (84). The social worker interventions in this study were consistent with this definition. The interview was directed towards defining possible problems, the referrals were suggestions of alternative courses of action and the supportive contacts aimed at finding and strengthening the individuals sources of support within their social context. Such early intervention ought to be a normal task for social workers and is in accordance with Cobb's definition of social support, the one used in the present study (6).

The most frequent intervention by hospital social worker was referral to health care units outside the ED. The intention was to connect the patients to other health care units that offer a higher degree of continuity and have more time to penetrate both medical and social problems than the ED. Various forms of supportive contacts, mostly within the hospital social worker group, were also established. Since all stated problems were individual and required an individual treatment, and the patients could not, for ethical reasons, be randomized according to type of intervention, it was not possible to evaluate the differences in

effect between the various types of intervention undertaken. By and large, the supportive contacts seemed to have a more favourable effect on the subsequent use of the ED than referrals to agencies outside the hospital.

However, interventions had no effect on total ED utilization rate. This was contrary to the findings in the first study (Paper I), in which the 25 % subsample of cases in which the interviewing social worker intervened, significantly reduced their visiting frequency in comparison to matched controls. These contradictory results may be due to the different designs of the studies. The first was not randomized as to intervention, and the telephone interview took place 5-7 months after the ED visit. Even if the interventions in the Paper IV had limited effect on ED use, they could, and probably did have other effects. The fact that total utilization rate did not decrease after intervention could be due either to the interventions missing the right goal or to the intervention period beeing too short. Although no randomized studies that relate support strengthening intervention to utilization rate at EDs have as yet been published, support for both these interpretations is to be found in the literature. Other researchers suggest that the effect of this type of intervention should be measured in objective or subjective health status (85). Tessler and Mechanic conclude that the most predictive measure for care utilization is perceived health status and psychological distress (86). In the present study, the persons in the intervention group who did not return to the ED during follow-up reported both higher prevalence of chronic illness and of general health problems than the non-revisitors from the control group, but they also reported a higher degree of loneliness, lack of close friend and personal problems than the non-revisitors from the control group. They did, however, not return to the ED, and this could be interpreted either as a direct or an indirect effect of the intervention.

The interpretation, that the intervention did not hit the right target or that we failed to identify the weak links in the network is also plausible. The difficulty in measuring both what support is needed and what kind of intervention to suggest has lately been discussed by Wortman and Conway (87), who in a review article point to the fact that it is not at all clear which part of an intervention is actually effective or how social support influences a recovery process. The empirical work cited in this review does not, however, discuss care utilization as a measure of perceived physical ill health.

The second interpretation, that the intervention period may have been too short, is supported by Theorell who observed that supportive intervention must have a duration of several months in order to produce profound effects (88). This is, however, not feasible in an emergency setting. On the other hand, interventions might very well be initiated in the ED leaving the long term work to be carried out within other fields of care, such as primary health care and social welfare.

As seen in the official instruction for social workers in medical settings, such type of intervention is only one part of the social worker's task. In the last paragraph of the instruction it is stated that the social worker also should call attention to need of resources. It will not suffice to refer and to rely

upon other community organs, the social worker must take part not only in pointing out insufficient resources, but also actively work for social changes, together with other agencies.

It can be concluded that it will not be enough to engage social workers in emergency care, or in any other type of ambulatory care, whether this be hospital based or in primary health care. The hospital social workers must to a much larger extent co-operate with other agencies, both public and private, and actively participate in disseminating information about the relationships between accessibility to support-giving networks, perceived ill health and care utilization. Then, and only then, can we really take part in preventive care, as Cassel visualized it: "It is perhaps not too far reaching to imagine a preventive health service in which professionals are involved largely in the diagnostic aspects - identifying families and groups at high risk by virtue of their lack of fit with their social milieu, and determinating the particular nature and form of the social supports that can and should be strengthened if such people are to be protected from disease outcomes." (47).

SUMMARY AND CONCLUSION

A relation between the following social network variables and perceived ill health and ED use were demonstrated:

- loneliness, lack of close friend and less contact with family in the county
- living alone, outside the labour force and economic problems.

Subjects living in areas characterized by high mobility, high proportions of immigrants and of unemployed in the age group 25-64 used the ED services to a higher extent than those from areas which did not show these socio-demographic risk indicators as regards social disintegration.

Heavy users of ED services were medically and psycho-socially more burdened than the general population in the catchment area.

Individuals who, originally, recurrently visited the ED but whose access to social networks improved, reduced the number of their visits in the course of time.

Hospital social worker intervention for heavy users of ED did not affect their total utilization rate, but it reduced the effects of age, health problems and living alone on recurrent ED use.

The conclusion drawn from the present studies was that use of emergency care is a complex product of many, sometimes concomitant factors: medical, social, psychological and structural. Some of these factors lay within the reach of individual or professional actions and interventions, but some, such as employment opportunities, geographical mobility and organization of care, are only amenable on societal level.

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